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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,455	12/08/2004	Peter Lurkens	DE 020150	1357

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EXAMINER

HANSEN, STUART ALAN

ART UNIT	PAPER NUMBER
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2809

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/517,455

Applicant(s)

LURKENS, PETER

Examiner

Stuart Hansen

Art Unit

2809

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/8/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/8/04, 7/8/05
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Application 10/517,455, filed December 8, 2004.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 102 26 213.6, filed in Germany on June 13th, 2002.

Claim Objections

2. Claims 1 & 3-8 are objected to because of the following informalities: In claim 1, the two connections (12, 15) should be (12, 13) because it appears 15 is a current sensor; 'mains voltage' should also just be 'main voltage'. In claim 3, the converter should be more specific (e.g. first/second, primary/secondary), just referencing (3) is not specific enough. The same applies for claim 4 as well as 'mains voltage should be 'main voltage.' Claim 5 should be more specific as to which converter has a transformer; first, second or both. Again in claim 6 which converter (first or second or both) has a resonant capacitor must be specified. Also in claim 7, which converter has an input capacitor needs to be clarified (first, second or both). And further, in claim 8 'the converter' must be more specific (first, second or both). Appropriate correction is required.



Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Shen (US 6,670,779 B2 filed 12/5/2001, dated 12/30/2003), and further in view of Koshimura et al. (US 4,388,561, filed 2/23/1981, dated 6/14/1983).

Regarding Claim 1, Shen teaches: a circuit having a converter for converting an AC voltage into a DC voltage (Fig 3), which converter has a diode half-bridge having two diodes (Fig 3 [D31, D32]) and a first center terminal (Fig 3, terminal between D31 and D32), a switch half-bridge having two switches (Fig 3 [M31, M32]) and a second center terminal (Fig 3, terminal between M31 and M32), a high-frequency inductor (Fig 3 [L33]), for connection to a source of main voltage (Fig 3 [AC source]) between the two center terminals, a first DC rail (Fig 3, node above D31, C33, M31, C35 and M33) being connected to the first center terminal by means of a first diode (Fig 3 [D31]) in the diode half-bridge and an electrically conductive connection (Fig 3, the wires, circuit board traces or any other well known electrically conductive means by which components are commonly connected), and a second DC rail (Fig 3, node beneath D32, C34 and M32) being connected to the first center terminal by means of a second diode (Fig 3 [D32]) in the diode half-bridge and an electrically conductive connection (Fig 3, the wires, circuit



board traces or any other well known electrically conductive means by which components are commonly connected).

Shen lacks anticipation by not teaching the circuit being: characterized in that the converter has a second converter for converting the AC voltage into a second DC voltage.

Koshimura et al. however does cover a circuit being: characterized in that the converter has a second converter (Fig 1 [6-1, 6-2, 6-3, 6-4, 6-5, and 6-6]) for converting the AC voltage into a second DC voltage (Fig 1 [V₂]).

Both Shen and Koshimura et al. teach inventions for the purpose of converting AC voltage to DC voltage therefore it would have been obvious to one of ordinary skill in the art to have the converter circuit of Koshimura et al. in Shen, for the purpose of creating multiple DC voltage levels for use in other system components such as the controllers in figure 3 of Shen [36].

With respect to claim 2, Shen further shows: the main voltage source (Fig 3 [AC Source]) and the high-frequency inductor (Fig 3 [L33]; a part of the converter) form a series circuit.

Shen however does not teach an input of the (second) converter being in the series arrangement between the main voltage source and the inductor (a part of the converter).

Koshimura et al. though does teach a second converter (Fig 1 [6-1, 6-2, 6-3, 6-4, 6-5, and 6-6]) between the AC power source [1] and a first converter [3-1].



Since both Shen and Koshimura et al. disclose AC to DC converters it would have been obvious to one skilled in the art at the time of the invention to have the second converter of Koshimura et al. in Shen for the purpose of creating a second DC voltage for use by any number of devices such as the control of Shen (Fig 3 [36]).

Regarding claim 3, Koshimura et al. shows the transmission of energy in the converter (Fig 1 [6-1, 6-2, 6-3, 6-4, 6-5, and 6-6] is frequency-dependent (Inherently, any inductive element such as an inductor, transformer or magnetically coupled inductors transfer energy dependent upon the signal frequency.)).

With respect to claim 4, Shen teaches: the high-frequency inductor (Fig 3 [L33] a part of the converter) and the main voltage source (Fig 3 [AC Source]).

Shen however does not teach a converter being arranged between the series combination of the high-frequency inductor (a part of the converter) and the main voltage source.

Koshimura et al. though does teach a second converter with two inductors magnetically coupled together (Fig 1[6-1, 6-2, 6-3, 6-4, 6-5, and 6-6]) between the AC power source [1] and a first converter [3-1].

Since both Shen and Koshimura et al. disclose AC to DC voltage converters, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the second converter of Koshimura et al. in Shen for the purpose of creating a second DC voltage for use by any number of devices such as the control of Shen (Fig 3 [36]).

With regard to claim 5, Koshimura et al. does teach: that the converter has a transformer (Fig 1 [6-1]).

In regards to claim 6 the combined device shows: the converter has a resonant capacitor (Fig 3 [C31] of Shen).

In respect to claim 7, the combined device shows: the converter (Fig 3) has an input capacitor (Fig 3 [C31] of Shen).

In regards to claim 8, Shen shows: the converter (Fig 3) has a control means (Fig 3 [36]).

Regarding claim 9, Shen shows: that the voltage at the input capacitor (Fig 3 [C31]) is limited by the control means (Fig 3 [36]) through a limitation of the duty factor of the switches (Fig 3 [M31]) and (Fig 3 [M32]) (At 100% duty factor for the switches [M31, M32] there would be next to nothing inhibiting the current from flowing from the main voltage source except the inductances [L31, L33], reducing the maximum voltage on the input capacitor [C31] , and at 0% duty factor for the switches [M31, M32], next to no current could flow from the main voltage source except what would flow into the capacitors [C31, C32, C33, C34, C35 and C36], allowing the maximum voltage on the input capacitor [C31] to increase. Therefore the duty factor can limit the voltage at the input capacitor [C31]).

Regarding Claim 10, Shen teaches a power supply system: having a converter for converting an AC voltage into a DC voltage (Fig 3), which converter has a diode half-bridge having two diodes (Fig 3 [D31, D32]) and a first center terminal (Fig 3, terminal between D31 and D32), a switch half-bridge having two switches (Fig 3 [M31, M32])

and a second center terminal (Fig 3, terminal between M31 and M32), a high-frequency inductor (Fig 3 [L33]), for connection to a source of main voltage (Fig 3 [AC source]) between the two center terminals, a first DC rail (Fig 3, node above D31, C33, M31, C35 and M33) being connected to the first center terminal by means of a first diode (Fig 3 [D31]) in the diode half-bridge and an electrically conductive connection (Fig 3, the wires, circuit board traces or any other well known electrically conductive means by which components are commonly connected), and a second DC rail (Fig 3, node beneath D32, C34 and M32) being connected to the first center terminal by means of a second diode (Fig 3 [D32]) in the diode half-bridge and an electrically conductive connection (Fig 3, the wires, circuit board traces or any other well known electrically conductive means by which components are commonly connected).

Shen lacks anticipation by not teaching the power supply system being: characterized in that the converter has a second converter for converting the AC voltage into a second DC voltage.

Koshimura et al. however does cover a power supply system: characterized in that the converter has a second converter (Fig 1 [6-1, 6-2, 6-3, 6-4, 6-5, and 6-6]) for converting the AC voltage into a second DC voltage (Fig 1 [V₂]).

Both Shen and Koshimura et al. teach inventions for the purpose of converting AC to DC therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the converter circuit of Koshimura et al. in Shen, for the purpose of creating multiple DC voltage levels for use in other system components such as the controllers in figure 3 of Shen [36].

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen (US 6,670,779 B2 filed 12/5/2001, dated 12/30/2003) and Koshimura et al. (US 4,388,561, filed 2/23/1981, dated 6/14/1983) as applied to claim 10 above, and further in view of Muraji et al. (US 5,134,491, filed 19/3/1990, dated 7/28/1992).

Regarding Claim 11, Shen combined with Koshimura et al. teach the power supply system as claimed in claim 10. Shen teaches the use of a discharge lamp (Fig 3 [37]; column 4, lines 29-34). Shen and Koshimura et al. lack anticipation however by not teaching a video projection system.

Muraji et al. however does teach: a video projection system (Fig 1 [1, 2, 3, 4, 5], column 3 lines 26-32); video projection system using a discharge lamp for producing the light required for the video projection system.

Since both Shen and Muraji et al. teach systems powering and using discharge lamps, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the power system of Shen and Koshimura et al. in Muraji et al. for the purpose of creating a power supply for a video projection system because it is an improved AC to DC voltage conversion system for powering a video projection apparatus.

With respect to Claim 12, Shen combined with Koshimura et al. teach the power supply system as claimed in claim 10. Shen also teaches the use of a discharge lamp (Fig 3 [37], column 4 lines 29-34). Shen and Koshimura et al. lack anticipation however by not teaching a form of office electronics or consumer electronics device such as a video projection system.

Muraji et al. however does teach: an office electronics or consumer electronics device (such as a video projection system) (Fig 1 [1, 2, 3, 4, 5]) that uses a discharge lamp (Fig 1 [1]) for producing the light required for the video projection system (column 3 lines 26-32).

Since both Shen and Muraji et al. teach the use of a discharge lamp, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the power converter of Shen and Koshimura et al. in Muraji et al. for the purpose of creating the power supply for an office electronics or consumer electronics device such as, a video projection system because it is an improved AC to DC voltage conversion system for powering an office electronics or consumer electronics device.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart Hansen whose telephone number is 571-270-1611. The examiner can normally be reached on 7:30- 5 M-Th, Alt. Frid 7:30-4 Est Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on 571-270-2100. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2809

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SH 1/31/07



STEVEN LOKE
SUPERVISORY PATENT EXAMINER

